FCC Part 15B
Measurement and Test Report

For

ZHANGZHOU LILLIPUT ELECTRONIC TECHNOLOGY CO., LTD

Zong Si Road, Lan Tian Industrial Zone, Zhang Zhou, Fu Jian, China

FCC ID: 2ABZL339

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	FPV MONITOR
Tested Model:	339
Report No.:	STR15048096I
Tested Date:	2015-04-14 to 2015-04-24
Issued Date:	2015-04-24
Tested By:	Jong Wang / Engineer
Reviewed By:	Lahm Peng / EMC Manager
Approved & Authorized By:	Jandy so / PSQ Manager

Prepared By:

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C.（518101）
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	ZHANGZHOU LILLIPUT ELECTRONIC TECHNOLOGY CO., LTD
Address of applicant:	Zong Si Road, Lan Tian Industrial Zone, Zhang Zhou, Fu Jian, China
Manufacturer:	ZHANGZHOU LILLIPUT ELECTRONIC TECHNOLOGY CO., LTD
Address of manufacturer:	Zong Si Road, Lan Tian Industrial Zone, Zhang Zhou, Fu Jian, China

General Description of EUT	
Product Name:	FPV MONITOR
Trade Name:	LILLIPUT
Model No.:	339
Adding Model(s):	339/W, 339/DW, 329/DW, Mopro7
Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model 339, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	Battery 7.4V, adapter DC 12V
Rated Current:	1300mA
Rated Power:	≤18W
Power Adapter Model:	FKS308HSC-1201500E
Lowest Internal Frequency:	8MHz
Highest Internal Frequency:	27MHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the ZHANGZHOU LILLIPUT ELECTRONIC TECHNOLOGY CO., LTD in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Charging & HDMI IN playing	Connected to DVD player
TM2	Charging & AV IN playing	Connected to DVD player
TM3	Receiving & AV OUT PLAY BACK	Connected to DISPLAY

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AV IN cable	1.6	Unshielded	Without Core
AV out cable	0.2	Unshielded	Without Core
HDMI Cable	0.8	Unshielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
DVD	Sony	BDP-S485	4054048
Display	DELL	U2410f	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AV Cable	1.5	Unshielded	Without Core

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. Conducted Emissions

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

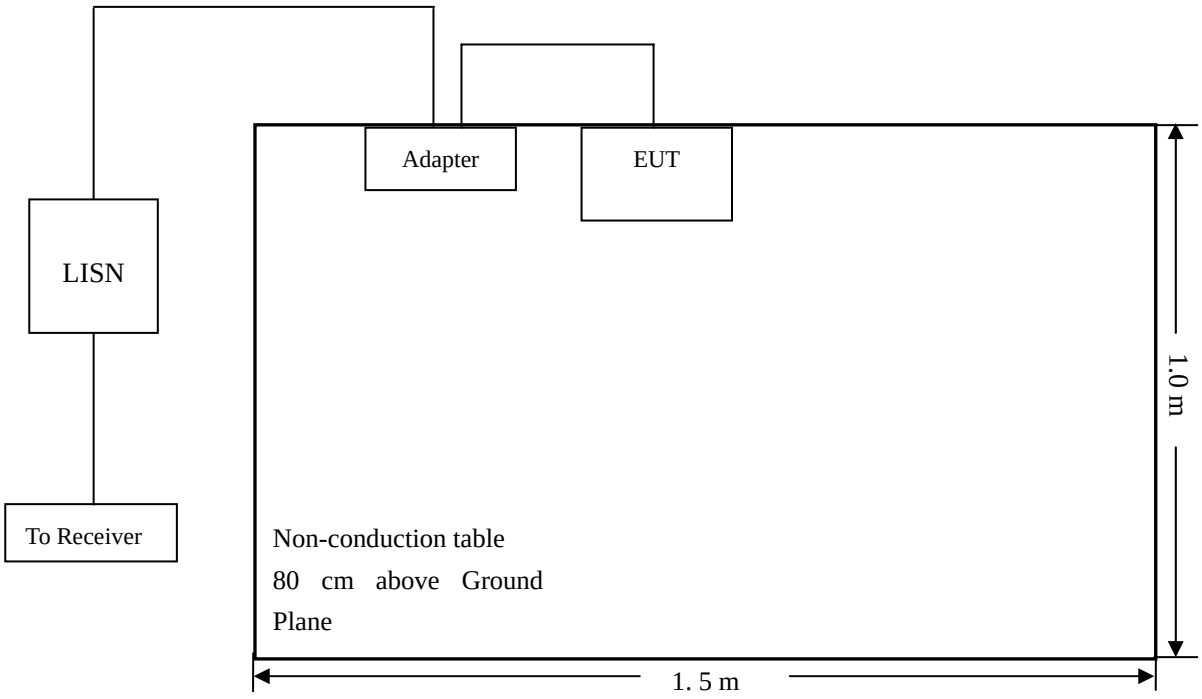
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2014-05-28	2015-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2014-05-28	2015-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2014-05-28	2015-05-27

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

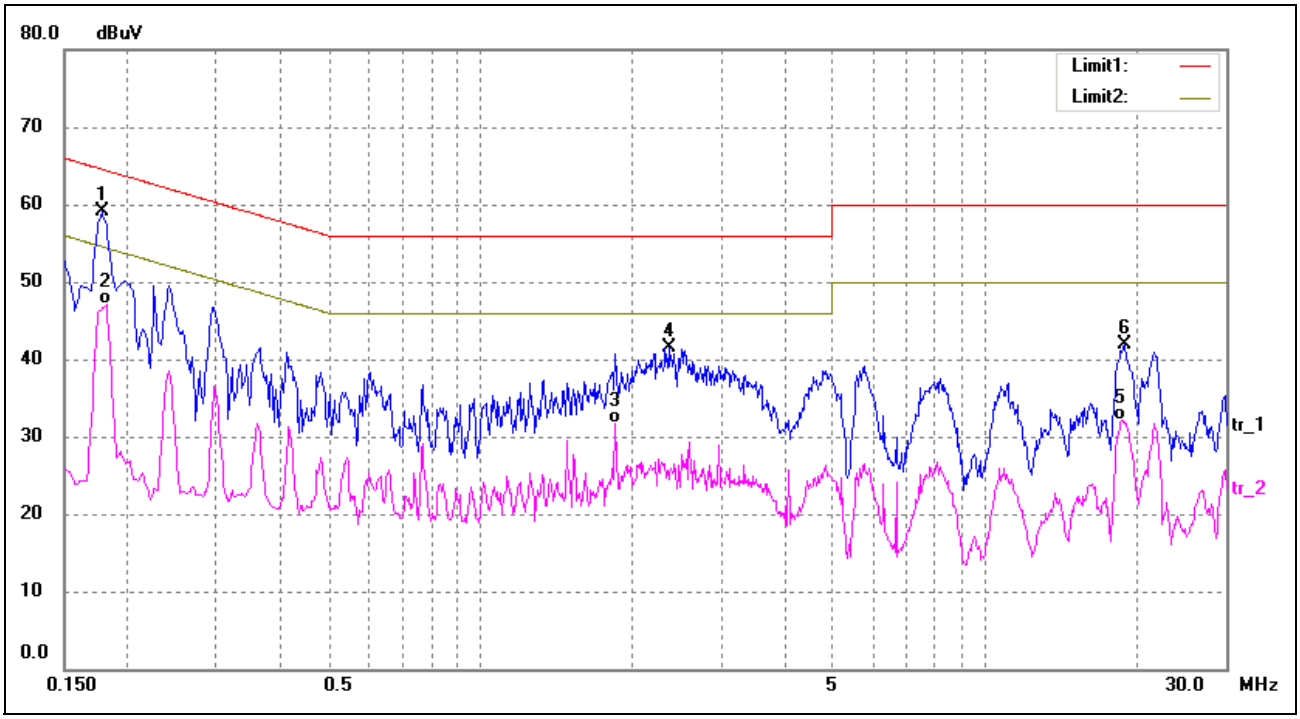
-5.06 dB at **0.1780 MHz** in the **Neutral**, TM2 Mode **Peak** detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

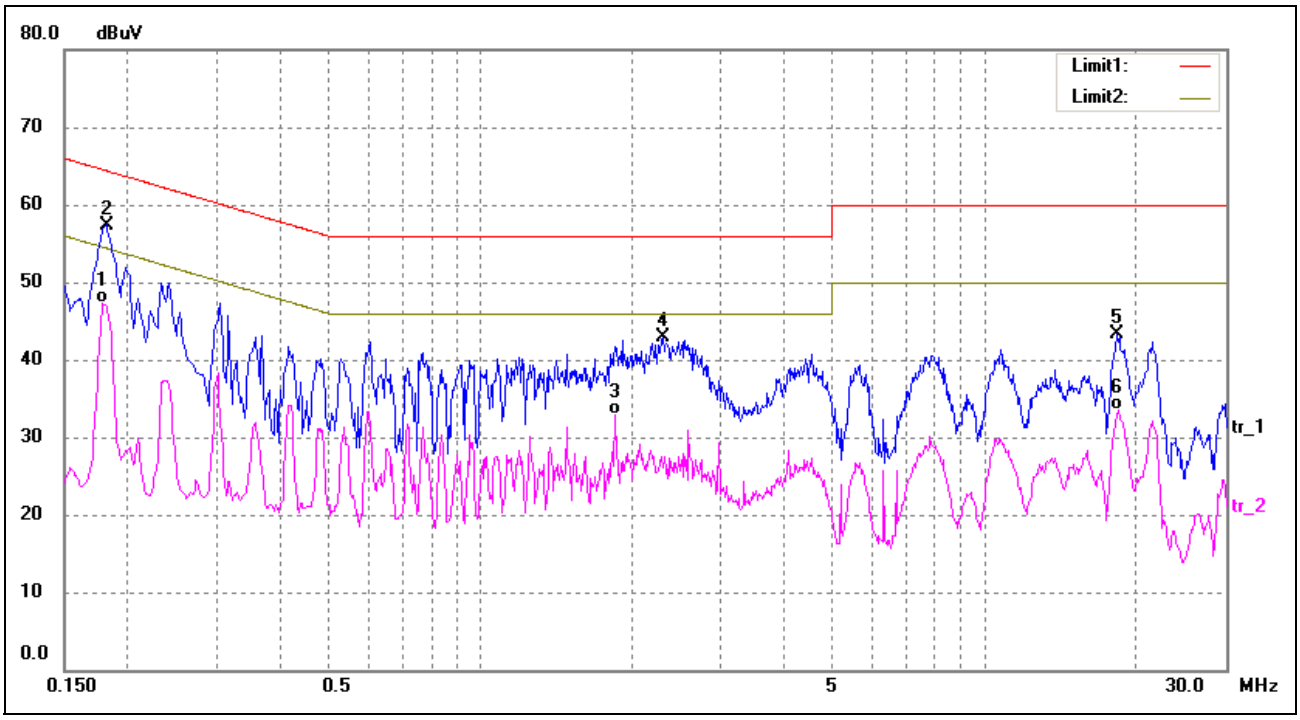
EUT: *FPV MONITOR*
Tested Model: *339*
Operating Condition: *TM1*
Comment: *AC120V/60Hz; Adapter DC 12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1780	49.51	9.50	59.01	64.58	-5.57	peak
2	0.1820	37.61	9.50	47.11	54.39	-7.28	AVG
3	1.8580	21.70	10.00	31.70	46.00	-14.30	AVG
4	2.3660	31.58	10.00	41.58	56.00	-14.42	peak
5	18.6260	20.32	11.73	32.05	50.00	-17.95	AVG
6	18.8620	30.09	11.77	41.86	60.00	-18.14	peak

Test Specification: *Line*

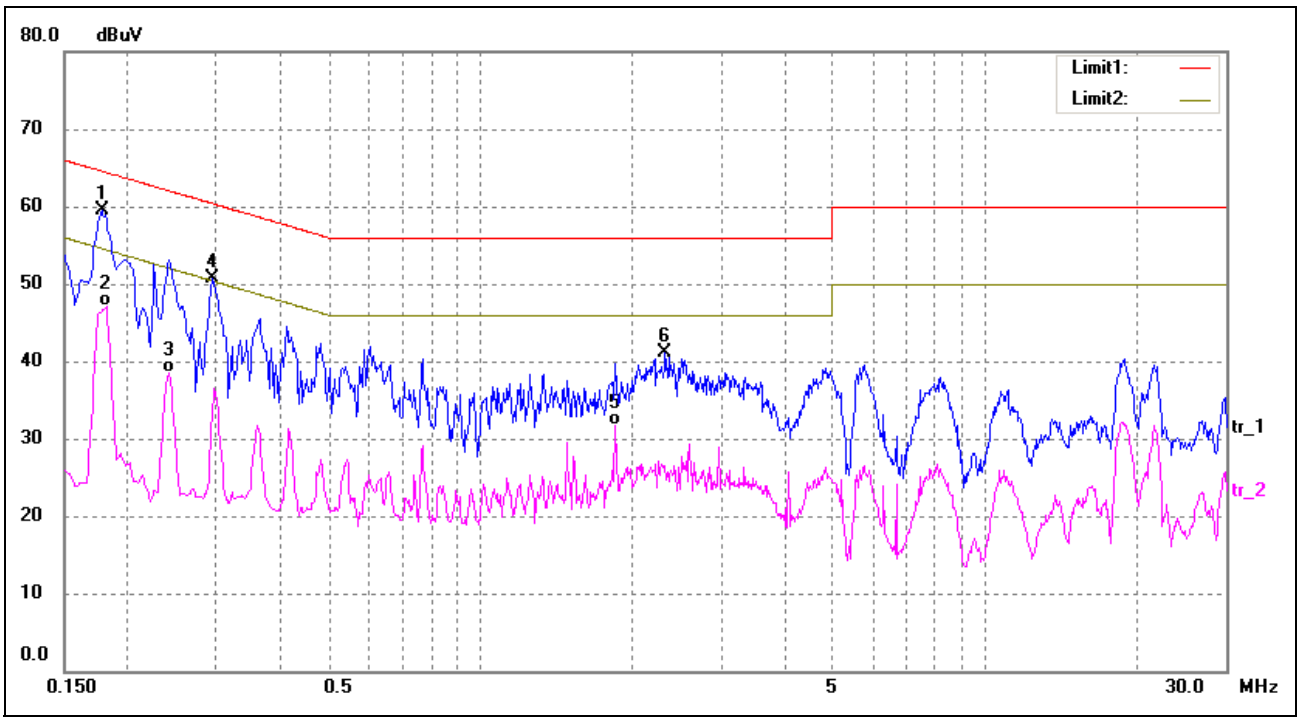


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1780	37.79	9.50	47.29	54.58	-7.29	AVG
2*	0.1820	47.90	9.50	57.40	64.39	-6.99	peak
3	1.8540	22.87	10.00	32.87	46.00	-13.13	AVG
4	2.2980	32.97	10.00	42.97	56.00	-13.03	peak
5	18.2980	31.71	11.66	43.37	60.00	-16.63	peak
6	18.3620	21.81	11.67	33.48	50.00	-16.52	AVG

Plot of Conducted Emissions Test Data

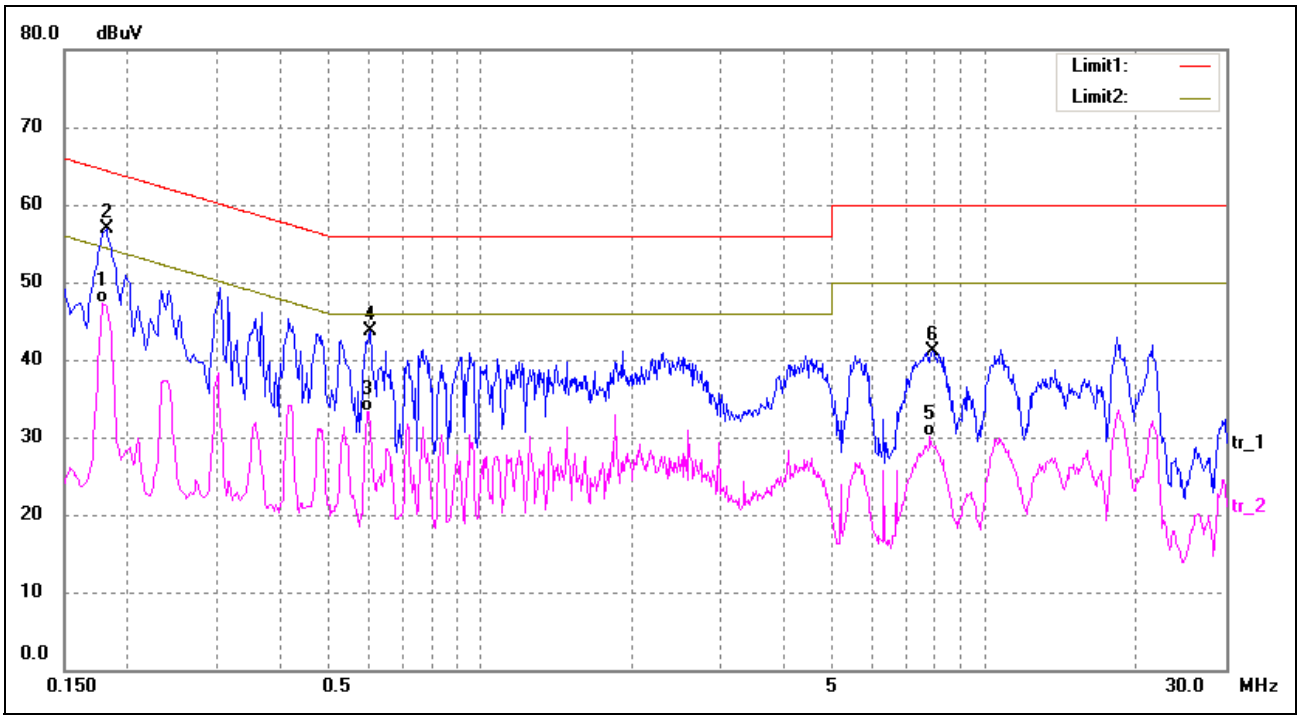
EUT: *FPV MONITOR*
Tested Model: *339*
Operating Condition: *TM2*
Comment: *AC120V/60Hz; Adapter DC 12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1780	50.01	9.50	59.51	64.57	-5.06	peak
2	0.1820	37.61	9.50	47.11	54.39	-7.28	AVG
3	0.2420	28.98	9.50	38.48	52.02	-13.54	AVG
4	0.2940	41.14	9.50	50.64	60.41	-9.77	peak
5	1.8580	21.70	10.00	31.70	46.00	-14.30	AVG
6	2.3260	31.07	10.00	41.07	56.00	-14.93	peak

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1780	37.79	9.50	47.29	54.57	-7.28	AVG
2	0.1820	47.40	9.50	56.90	64.39	-7.49	peak
3	0.5980	23.70	9.60	33.30	46.00	-12.70	AVG
4	0.6060	34.19	9.61	43.80	56.00	-12.20	peak
5	7.7819	20.16	10.00	30.16	50.00	-19.84	AVG
6	7.8619	31.03	10.00	41.03	60.00	-18.97	peak

4. Radiated Emissions

4.1 Measurement Uncertainty

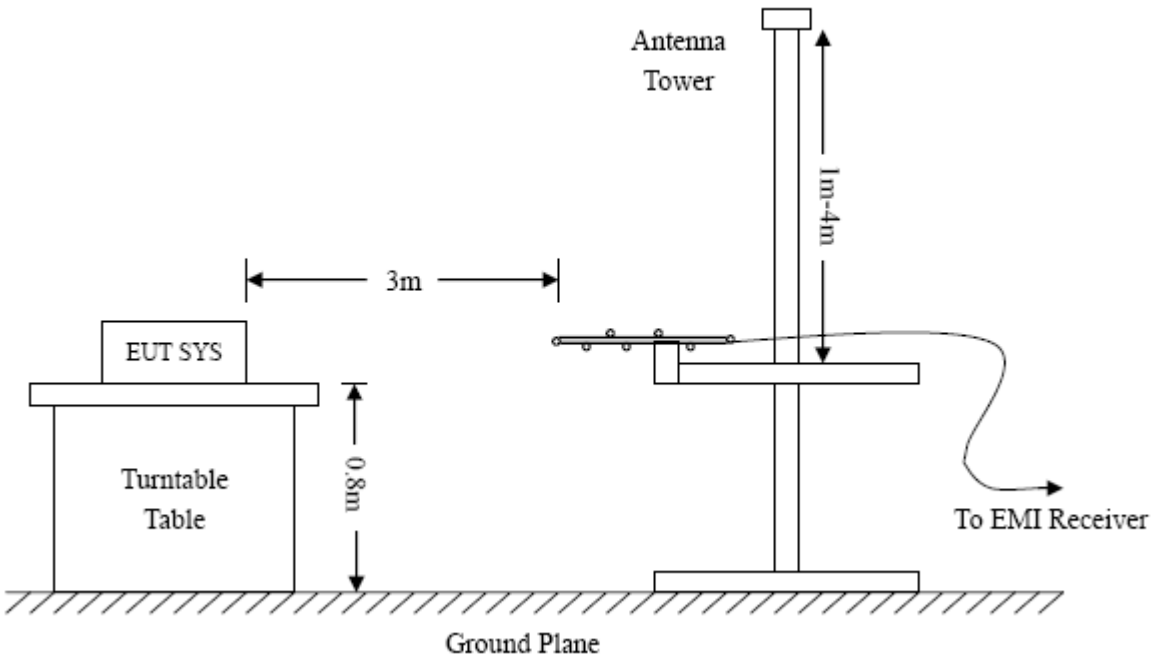
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

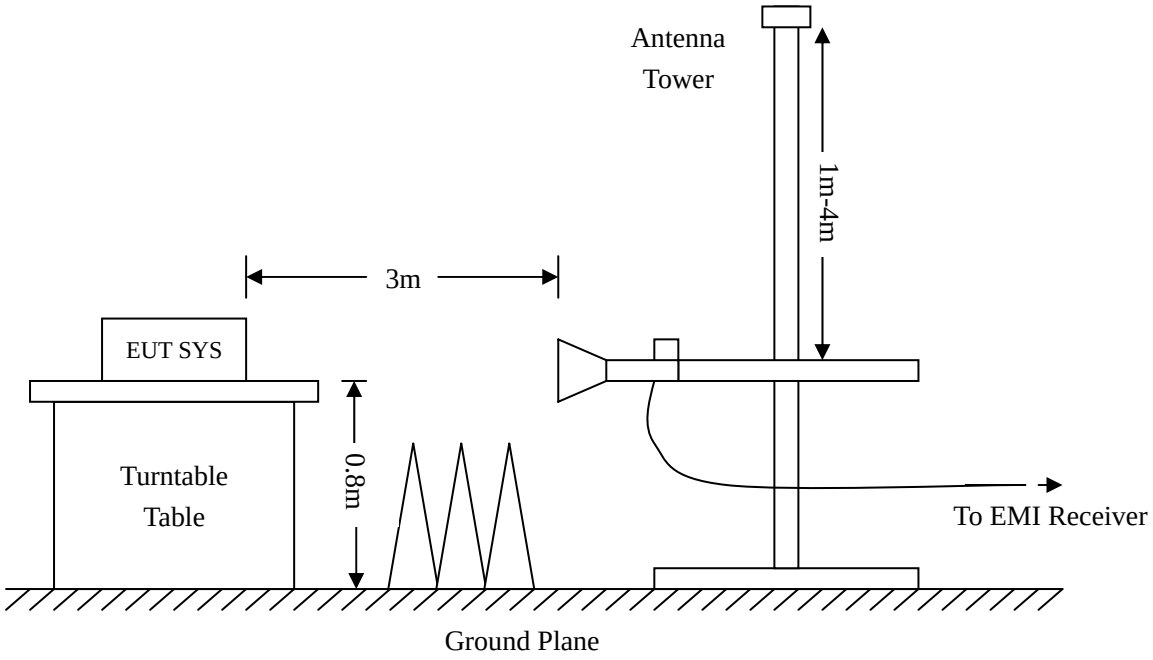
4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-05-24	2015-05-23

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.





4.4 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.109(a) Limit

4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

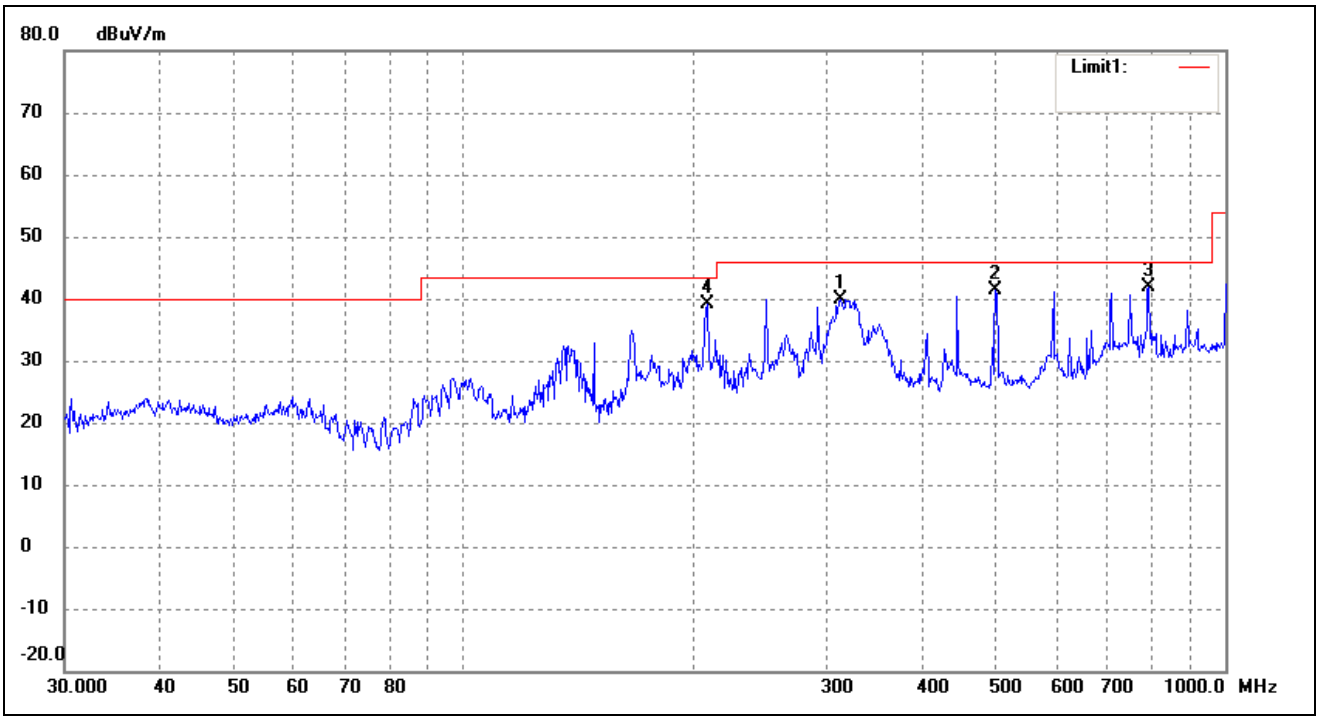
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-3.47 dB at **785.0935 MHz** in the **Horizontal** polarization, TM2 Mode **9kHz** to **1 GHz**, **3Meters**

Plot of Radiated Emissions Test Data

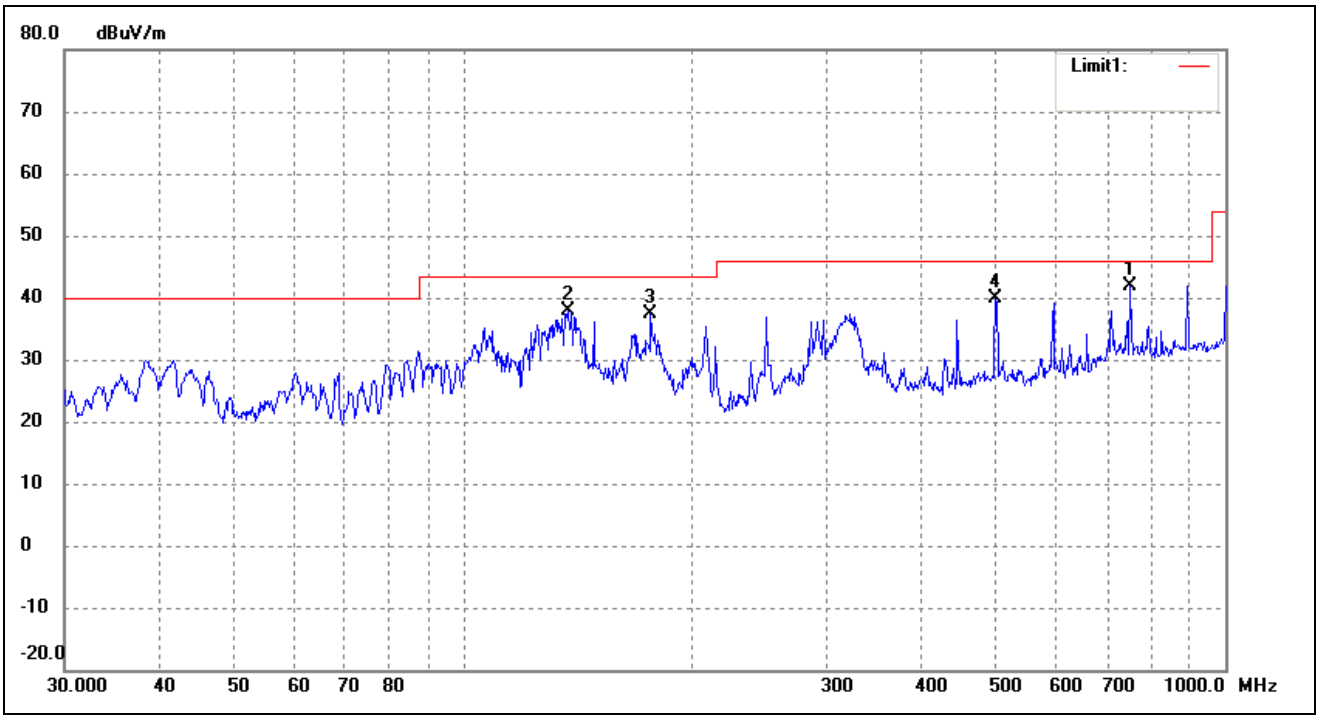
EUT: *FPV MONITOR*
Tested Model: *339*
Operating Condition: *TM1*
Comment: *AC120V/60Hz; Adapter DC 12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	313.2760	30.66	9.25	39.91	46.00	-6.09	76	200	peak
2	499.4246	30.64	10.83	41.47	46.00	-4.53	138	100	peak
3	793.3959	27.83	14.04	41.87	46.00	-4.13	195	100	peak
4	209.3129	34.84	4.35	39.19	43.50	-4.31	268	100	peak

Test Specification: *Vertical*

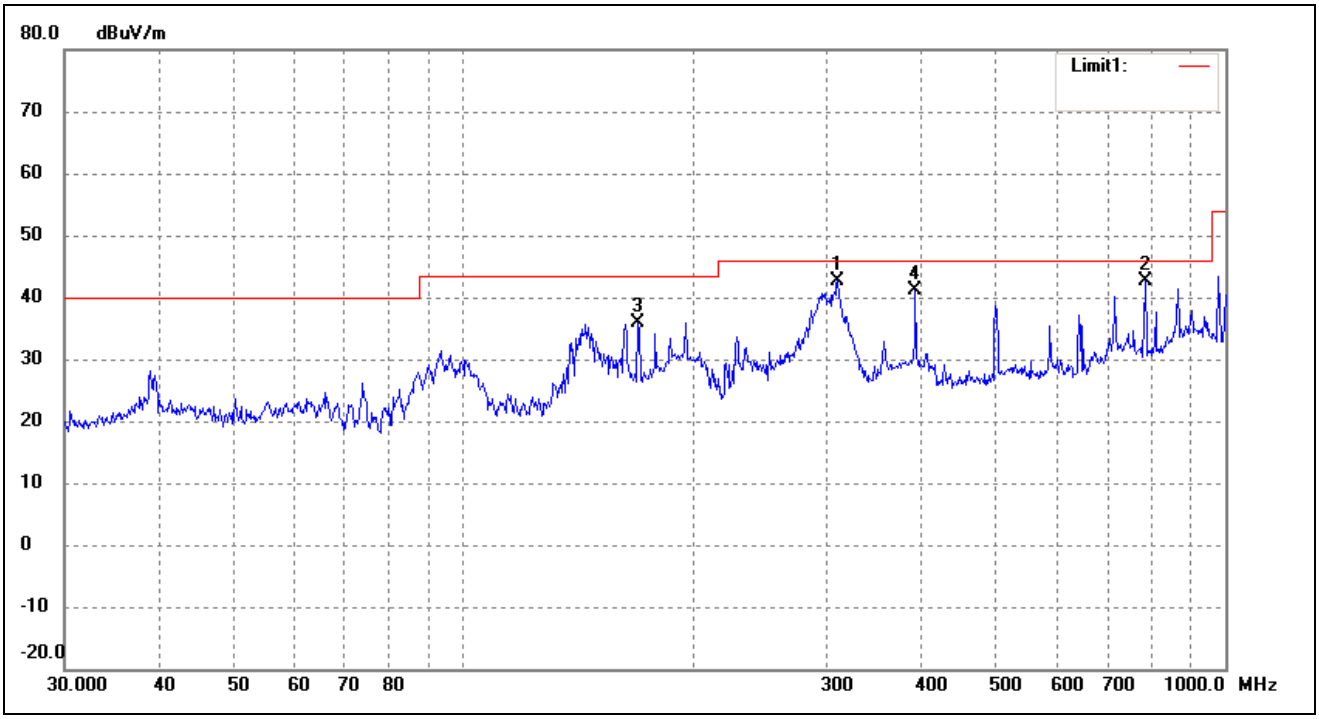


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	750.1082	26.79	15.09	41.88	46.00	-4.12	78	100	peak
2	137.4201	35.33	2.61	37.94	43.50	-5.56	106	100	peak
3	176.2685	34.63	2.73	37.36	43.50	-6.14	195	100	peak
4	499.4246	29.09	10.83	39.92	46.00	-6.08	258	100	peak

Plot of Radiated Emissions Test Data

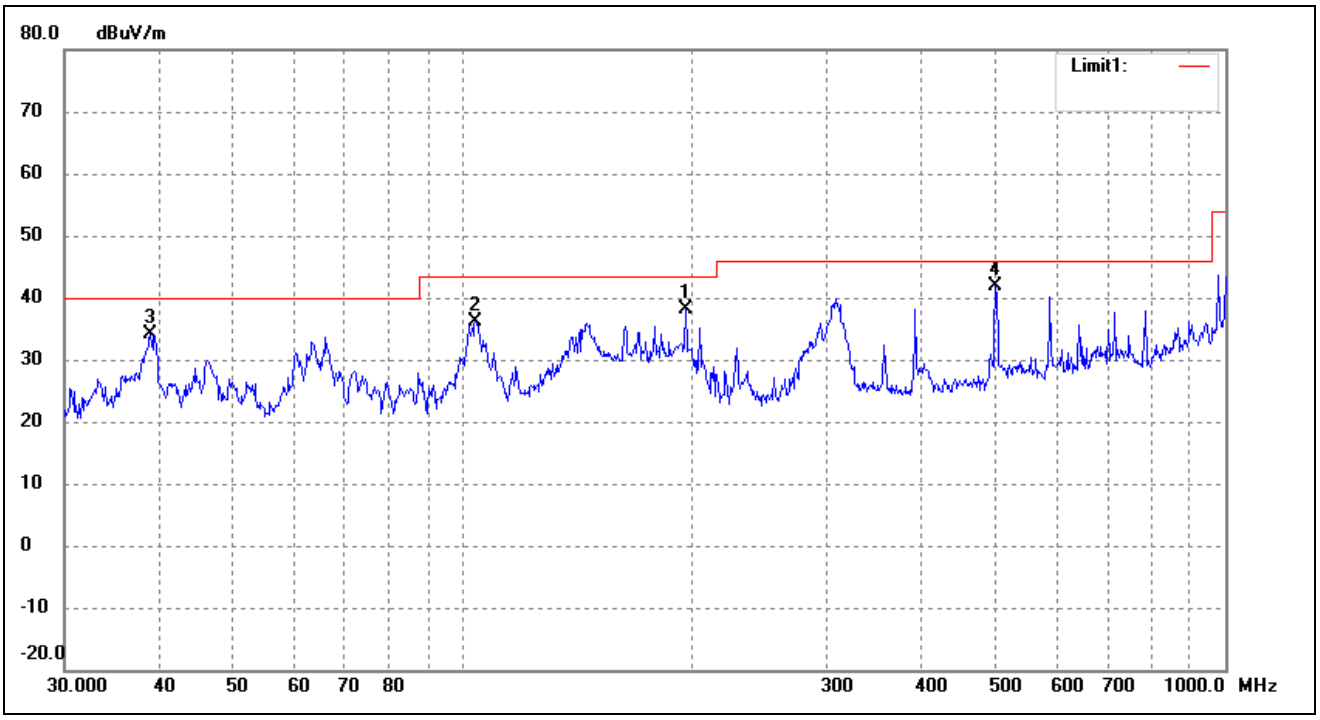
EUT: *FPV MONITOR*
Tested Model: *339*
Operating Condition: *TM2*
Comment: *AC120V/60Hz; Adapter DC 12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	309.9977	33.29	9.23	42.52	46.00	-3.48	74	100	peak
2	785.0935	28.85	13.68	42.53	46.00	-3.47	95	100	peak
3	169.5990	33.21	2.68	35.89	43.50	-7.61	163	100	peak
4	392.0951	31.25	9.76	41.01	46.00	-4.99	279	100	peak

Test Specification: *Vertical*

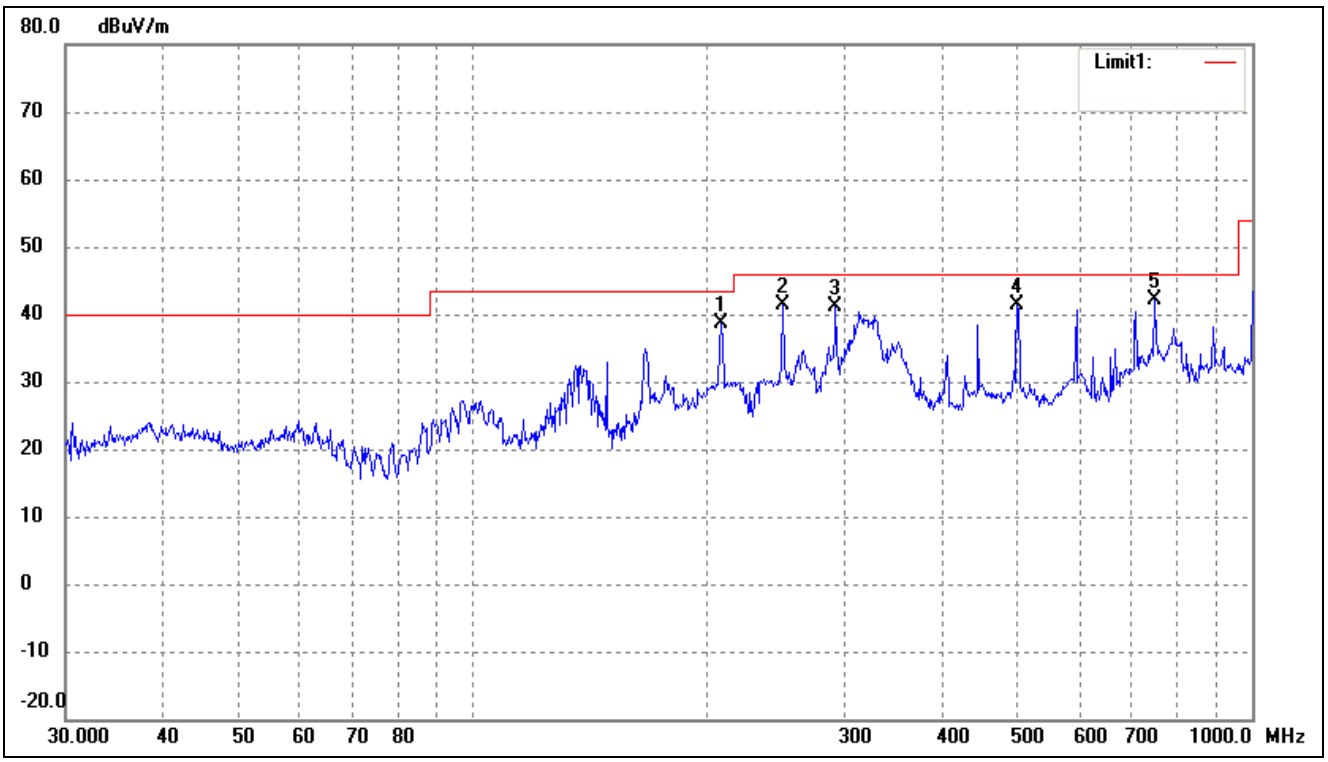


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	195.8220	34.73	3.47	38.20	43.50	-5.30	39	100	peak
2	103.8054	30.32	5.73	36.05	43.50	-7.45	97	100	peak
3	38.8879	26.21	7.95	34.16	40.00	-5.84	163	100	peak
4	499.4246	31.13	10.83	41.96	46.00	-4.04	246	100	peak

Plot of Radiated Emissions Test Data

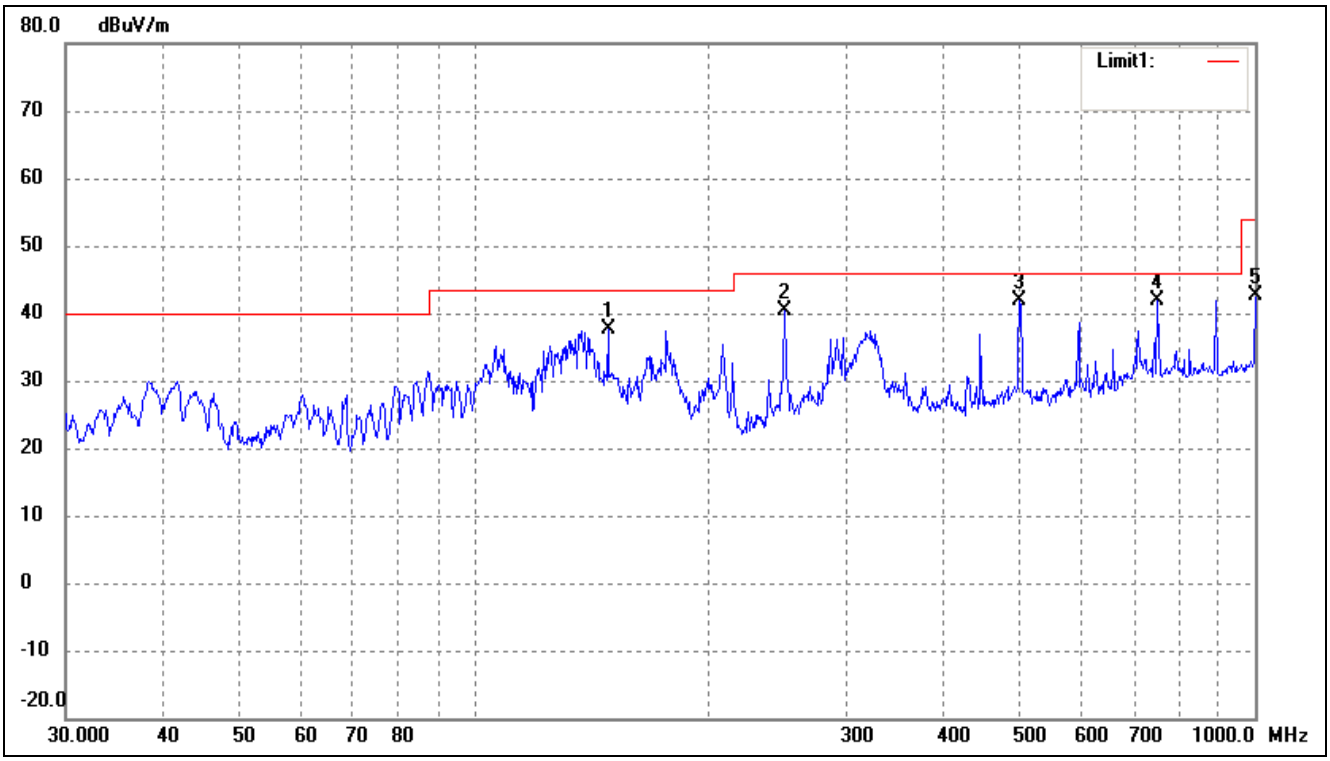
EUT: *FPV MONITOR*
Tested Model: *339*
Operating Condition: *TM3*
Comment: *AC120V/60Hz; Adapter DC 12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	207.8499	34.46	4.23	38.69	43.50	-4.81	157	100	peak
2	249.4250	34.69	6.68	41.37	46.00	-4.63	364	100	peak
3	292.0581	32.31	8.86	41.17	46.00	-4.83	12	100	peak
4	499.4245	30.64	10.83	41.47	46.00	-4.53	47	100	peak
5	750.1082	28.02	14.10	42.12	46.00	-3.88	125	100	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	148.4410	35.20	2.49	37.69	43.50	-5.81	132	100	peak
2	249.4250	33.65	6.68	40.33	46.00	-5.67	54	100	peak
3	499.4246	31.09	10.83	41.92	46.00	-4.08	67	100	peak
4	750.1082	26.79	15.09	41.88	46.00	-4.12	135	100	peak
5	1000.0000	25.16	17.41	42.57	54.00	-11.43	35	100	peak

The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

******* END OF REPORT *******